Scanners, e.g., operating within agents associated with the hosts, collect information regarding the regions and, more particularly, the hosts, storage devices and interconnect elements that make them up. Continuing the above example, a scanner operating on or in conjunction with the first host reports that it can access port 1 on storage device A and port 1 on B via the switch. A scanner operating on or in conjunction with the second host reports that it can access ports 1 and 2 on storage device B via the switch.

A manager operating, for example, on a further digital data processor disambiguates information from the regions and discerns the topology of the portion of the SAN spanned by the regions. Thus, it identifies as a virtual SAN elements from regions that have at least one common storage device port, or other interconnect endpoint, with at least one other region. In the example above, the manager identifies, as a virtual SAN the first and second hosts, the switch, and storage devices A (port 1) and B (ports 1 and 2) -- since these are the combined elements of the two regions have an endpoint in common, to wit, port 1 of storage deviceB.

Maintenance and Removal of SAN Change Histories

The invention provides in other aspects improved storage area networks (SANs) that maintain an internal representation of the SAN in a first data store and that maintains a separate store identifying changes to the SAN. A process executing, for example, in the manager digital data processor of the type described above utilizes the first store to generate a display, e.g., on the operator/administrator console, of the SAN topology, its components and/or the relationships among those components (collectively, "topology"). The manager responds to information in the second store to identify on the display changes in the SAN.

In related aspects, the invention provides an improved SAN as described above in which the digital data processor selectively discontinues identifying changes on the topology display. This can be in response, for example, to an operator/administrator request. At the same time, or otherwise in connection therewith, the digital data processor can remove the corresponding history information from the second store.

Further related aspects of the invention provide improved SANs as described above in which the internal representation (or model) of the SAN is represented by objects or other data constructs (collectively, "model objects") maintained in the first store. Each of those model objects can represent, for example, a respective component of the SAN or a respective interrelationship between components of the SAN. And, each can identify the respective component/interrelationship and its attributes.

The second store can likewise maintain, according to further aspects of the invention, objects or other data constructs (collectively, "history objects") that represent changes to the SAN. Each of those objects corresponds to a respective object in the first store or component in the SAN (though, there typically are not as many history objects as model objects or SAN components) .

The history objects can reflect a status of their respective components, e.g., as "new," "suspect," "missing" or otherwise. The designation "new" applies, for example, the SAN components or interrelationships that have been added since the last topology display (or operator/administrator "clear history" command); the designation "suspect" to components/interrelationships whose status is inconsistently reported, e.g., by the aforementioned agents and their respective hosts; and the designation "missing" to component/interrelationships that have been removed since the last topology display (or operator/administrator "clear history" command). Further statuses that can be represented by the history objects include, for example, “broken” indicating that the component is not functioning properly; “attribute changed” indicating that an attribute of the component has since the last topology display (or operator/administrator "clear history" command); “needs attention” indicating that the component, though functioning properly, requires operator attention; and “moved” indicating that the component has been moved in the topology since the last display (or operator/administrator "clear history" command).

Related aspects of the invention provide a SAN as described above in which the status reflected by a history object is a function of the corresponding component’s prior status and its condition, e.g., as reported by a scanner or discerned by the discover engine. Thus, for example, an object